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SUMMARY OF NATIONAL PAPER*

TOWARDS THE EFFECTIVE UTILIZATION OF SCIENCE AND TECHNOLOGY FOR PHILIPPINE DEVELOPMENT

INTRODUCTION

At the outset, the Philippine National Paper defines the country's concept of development, as reflected in the Five-Year Philippine Development Plan for 1978-1982 in the following words: "The achievement of a much improved life for every Filipino is the supreme national aspiration. Towards this end, the conquest of mass poverty becomes the immediate, fundamental goal of Philippine development." The Plan also recognizes the crucial role of science and technology in the achievement of the nation's development goals. Several activities have led to the preparation of the National Paper, in particular, two national workshops, a subregional meeting and an international conference on themes relevant to the UNCSTD.

1. SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

There have been sustained and extensive efforts on the application of science and technology for Philippine development. Evidence for these efforts is provided

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* The designations employed, the presentation of material and the views expressed in this paper are those of the Government of the Philippines and do not necessarily reflect the practices and views of the Secretariat of the United Nations in any of these respects.

principally by government recognition and support to Philippine science and technology through the promulgation of the "Science Act of 1958 creating the National Science Development Board as the highest science policy-making body and co-ordinating agency, through substantial funding for research and development, and through a number of policies which weave science and technology into national development efforts. This governmental support has led to the building up of a sizable and significant science and technology infrastructure in the Philippines, involving a large number of agencies and research and development establishments and a body of scientific and technological manpower of perhaps over a 100,000 personnel. The technological demands arising from the series of four-year development plans from 1967-1977 were responded to by Philippine science and technology in a number of ways, but particularly with contributions to import-substitution programmes, the shift from assembly-type to finishing-type industries, the utilization of locally available raw materials in cottage, small and medium industries, and the attainment of self-sufficiency in rice production. During this period, the first Research and Development Programme for 1973-1976 was formulated by NSDB with its emphasis, inter alia, (1) on the utilization of abundant indigenous raw and waste materials for the production of import substitutes, as well as the development of exportable manufacture, (2) development of raw material and process techniques, and (3) the adoption and application of methods for quality standardization of products for the local and foreign market.

Notwithstanding these substantial efforts and significant successes, there are serious obstacles which come in the way of effectively harnessing science and technology for development. One major obstacle is associated with the transfer of technology from developed to developing countries. In general, these transfers are not only very expensive, but they often involve restrictive clauses which are to the disadvantage of the importing country. Also, in many cases, the technologies transferred are inappropriate in that they are: (1) too far advanced and not adapted to the importing country; (2) ill-suited to its inadequate infrastructure, insufficiently trained manpower, restricted market, etc.; and (3) inconsistent with national goals. This underlines the crucial problem of the choice of those technologies which will advance the development efforts of the country. Another category of obstacles are related to the internal transfer of technology from "producers" to users, and range from the lack of sufficient capability in some areas to the lack of faith of the end-users in local experts.

The mismatch between the development of human resources and developmental needs is also an important problem, as in the persistence of a product-mix which is a carry-over from a dependence on the developed countries.

The impact of these obstacles has been considerable. They have contributed to the persistence of a number of serious economic and social inequities, including the inadequacy of basic needs; income inequalities, unemployment and underemployment, balance of payments and price instability, an energy constraint, environmental problems and regional growth disparities, all of which are aggravated by a rapidly growing population.

Against this background, the Five-Year Development Plan for 1978-1982 outlines a fundamentally different approach to development. It demands "the nation's concerted attack on the problems of mass poverty and unemployment and underemployment, and social injustice".

It rejects the equating of development with mere economic growth which was the view prevailing in the past. The Plan defines detailed development objectives and strategies for the various economic and social sectors, and for infrastructural components such as energy. For instance, it states that "the growth of the industrial sector will be geared toward the following objectives: (1) employment generation; (2) increases in net foreign exchange earnings; and (3) greater self-reliance in the supply of important commodities, including energy sources.

It is these development objectives and strategies which constitute the new perspective for Philippine science and technology.

The implementation of this new perspective is already in progress with a number of measures including those concerning new policies for the transfer of technology, the contribution of indigenous research and development, strengthening of the institutional system of science and technology and the reversal of "brain drain".

Realizing that these current measures do not constitute a complete and coherent package, the National Paper makes a number of new recommendations. It underlines the paramount importance of choosing technologies which are appropriate from the standpoint of the country's development objectives. Such a set of appropriate technologies are sure to consist of a mix of capital-intensive and labour-intensive technologies, the latter category being particularly suitable for cottage, small and medium industries in rural areas. It also recommends improvements in national approaches to technology transfer, particularly the widening of the source of technologies through the strengthening of the information system now in operation; it suggests an interaction between the government and private dissemination of successful research and development to end-users; it recommends that extension agents, who can serve as an ideal link between technology "producers" and users, be assigned a crucial role; and quite apart from these proposed measures, it also recommends new science and technology approaches.

2. INSTITUTIONAL ARRANGEMENTS AND NEW FORMS OF INTERNATIONAL CO-OPERATION IN THE APPLICATION OF SCIENCE AND TECHNOLOGY

The country is giving importance to international co-operation in increasing the effectiveness of the country's efforts in science and technology development. Such co-operation can take place through bilateral, regional and multilateral arrangements. This includes joint and co-operative ventures with other countries especially with those in South-East Asia as exemplified by the Association of Scientific Co-operation in Asia (ASCA), and the Association of South-East Asian Nations (ASEAN).

Technical co-operation could also be achieved through the pooling of resources of co-operating countries to make their science and technology more effective.

Regional co-operation could help solve many problems. For instance, (1) the development of science and technology in member countries could be catalyzed through the establishment of a central regional body, which would supervise and co-ordinate a network of technological information systems; (2) centres of

knowledge on appropriate technologies can be established; (3) a technological assessment can be done on a regional basis; (4) a scientific and technological resource inventory survey can be undertaken to identify ways of matching the available skills and expertise with local needs; (5) research and development institutions that work mainly on the adaptation of already proven technologies could assure the suitability of technologies to the areas where they will be implemented; and (6) transferable indigenous technologies could be properly disseminated.

3. UTILIZATION OF THE EXISTING UNITED NATIONS SYSTEM AND OTHER INTERNATIONAL ORGANIZATIONS

Likewise, the United Nations system, and its member organizations and specialized agencies, have in some cases facilitated transfer of technology and the effective dissemination of information.

The National Paper reiterates its commitment to the various resolutions co-sponsored or supported by the Philippines especially in the early adoption of the International Code of Conduct and the International Code of Ethics. However, it also takes note of the various weaknesses of the United Nations system, in particular (1) the overlapping functions of some United Nations agencies; (2) the proliferation and duplication of information and technical advisory systems, and their under-utilization; (3) the weak linkages between the United Nations system and counterpart national focal points.

The following developments are therefore necessary: (1) establishment of national referral and documentation infrastructures which can secure foreign scientific and technological knowledge from foreign sources for evaluation relative to local needs, by means of appropriate technical-assistance programmes of national, regional and international levels; (2) integration of existing international systems through possible unification and standardization of systems and procedures; (3) enhancement of the quality of information, and its reclassification according to specific criteria as local, climatic and resource conditions; (4) pilot projects on selected countries to highlight the returns which can be obtained through the proper utilization of existing science and technology information being processed by existing international systems; and (5) identification of national focal points for all international arrangements on science and technology to rationalize the assistance extended to countries.